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IS YOUR NEW HOUSE ENERGY EFFICIENT?

Government
Publication

November 1996

How do you know if your new house is energy efficient? How much insulation is cost-effective? Is a house energy efficient if it has no basement insulation or if it has no heat recovery ventilator (HRV)? The new *1996 National Energy Code for Houses* (Energy Code) has the answers. Your new house or addition is energy efficient to a level appropriate to the location and type of heating energy if it meets or exceeds the minimum requirements in this new standard.

Most builders associate codes with restrictions and higher construction costs. This code is different. Builders have a choice. They have the freedom to use the most affordable construction methods and materials available in order to meet the energy-efficiency target. Or, if builders choose not to take advantage of this flexibility and prefer to meet each minimum requirement, they can still guarantee new homeowners that the amount of energy efficiency built into the home is appropriate for the climate and cost of heating.

Codes have not always been kind to innovators. To get building plans approved, it is easier to do something the way it has always been done. Canada cannot afford to stifle new and better ideas. The Energy Code addresses this problem. Its flexibility gives builders the option to find effective, affordable ways to reach the performance target. It is a new code approach, and it is essential to take advantage of and encourage new energy-efficient Canadian products and technology.

WHAT ARE THE BENEFITS TO USING THIS ENERGY CODE?

✓ More construction options

Builders have greater flexibility to use new construction systems and products yet still achieve the same or better energy efficiency.

✓ Higher demand for energy-efficient products

A strong domestic market for new products can showcase our technology and strengthen our export potential.

✓ Economic benefits

Lower energy bills mean homeowners will have more money to spend on other products and services. Energy efficiency is good for the economy.

✓ Lower greenhouse gas emissions

Every new house upgraded to meet the Energy Code requirements will save energy. With over 110 000 new units constructed each year, the savings add up. And those reductions in greenhouse gas emissions are sustained year after year, for the life of a building.

IS THIS ENERGY CODE MANDATORY? WHEN DOES IT COME INTO EFFECT?

Construction codes are the responsibility of the provincial or territorial governments. Like the *National Building Code* and the *National Plumbing Code*, the Energy Code must be adopted by the authority having jurisdiction before it becomes law.

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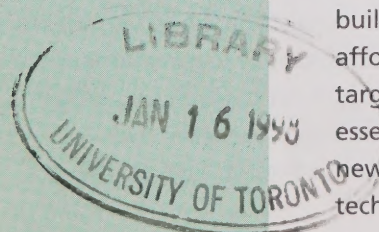
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It is expected that over the next two or three years some provinces and territories will adopt the Energy Code, and others will promote the code requirements as guidelines, especially where current energy-efficiency requirements are outdated or where none exist.

WHAT TYPES OF HOUSING MUST COMPLY?

All new heated buildings of residential occupancy that are three storeys or less in height fall under the *1996 National Energy Code for Houses*. A separate code, the *1996 National Energy Code for Buildings*, applies to all other buildings.

New additions larger than 10 m² (approximately 100 sq. ft.) are covered by the Energy Code, but renovations of existing dwelling units are exempt. Also exempt are summer cottages and other types of seasonal housing that will never have heating equipment other than a fireplace.

WHAT IS MEANT BY COST-EFFECTIVE LEVELS OF ENERGY EFFICIENCY?

This is the first residential energy-efficiency standard that sets minimum thermal resistances (R-values) for walls, roofs and windows based on cost-effectiveness. The idea is to make sure each minimum requirement does not cost more to implement than it would save in energy costs.

What this means is that the climate and the cost of energy used to heat the home both have a big influence on how much insulation is needed for a house, how energy efficient the windows should be or whether a heat recovery ventilator is needed. For example, electricity is generally more expensive than oil or natural gas; thus, it is cost-effective for an electrically heated house to have more insulation and better windows.

The climate across Canada ranges from mild to extreme. Costs and availability of natural gas, oil, electricity and other energy sources vary as well. To make the minimum levels appropriate for each part of Canada, the code divides Canada into 34 regions. Each region has a separate set of minimum levels for each energy type. Each requirement was calculated using a life-cycle costing analysis that included energy and construction costs, and climate.

IS THIS ANOTHER WAY OF SAYING NEW HOUSING WILL COST MORE?

Not if you factor in lower operating costs. In fact, houses designed to be heated with inexpensive energy may already meet Energy Code levels.

More importantly, the code opens the door to using different approaches to achieve a certain level of energy efficiency. This means if traditional construction material prices are high, you can count on the building industry to come up with more cost-effective alternatives that do the job just as well.



HOW DOES THE ENERGY CODE COMPARE TO THE R-2000 STANDARD?

The R-2000 Home Program laid the groundwork for the introduction of the Energy Code. Hundreds of trained builders across Canada have voluntarily incorporated airtightness techniques, continuous ventilation and the R-2000 house-as-a-system approach into mainstream housing. They make it possible to apply the proven benefits to all new houses.

In terms of energy efficiency, a home built to the R-2000 standard will be more energy efficient than the same home built to meet the Energy Code.

There are four key differences between the R-2000 standard and the Energy Code:

1. The R-2000 standard is voluntary, whereas the Energy Code will be mandatory when adopted into regulation.

Third-party testing is done to ensure R-2000 Homes meet high quality assurance standards. In comparison, once the Energy Code is adopted by a province or territory, municipal building inspectors will verify that all new houses meet or exceed the minimum requirements.

2. The R-2000 standard sets an energy budget based on climate.

The Energy Code links minimum levels of envelope thermal resistance with the climate and the cost of energy used to heat the

home. Thus Energy Code houses in severe climates with expensive energy sources may approach R-2000 levels of efficiency.

For example, a study showed that electrically-heated Energy Code homes in Manitoba will be slightly more efficient than R-2000 Homes.

3. An R-2000 design evaluator must use the HOT2000 software program to verify that the design of each R-2000 Home meets the R-2000 standard.

This software is optional with the Energy Code. Another Energy Code option is an easy-to-use program called HousTrad to quickly test different insulation, framing and window efficiency combinations.

The simple option is to look up the minimum levels in the Energy Code tables.

4. The Energy Code only considers energy efficiency.

It complements the *1995 National Building Code*, which covers ventilation and other health and safety requirements. The updated R-2000 standard incorporates other environmental benefits over and above energy efficiency, such as indoor air quality, water conservation, recycling and construction waste reduction.

WHAT IS IN THE ENERGY CODE?

The code is comprehensive, taking a house-as-a-system approach. The areas addressed are

AIRTIGHTNESS

Minimum allowable leakage

INSULATION

Minimum insulation R-values for exterior walls, floors, attics and basements

WINDOWS

Minimum energy rating (ER) numbers

HRVs

Is heat recovery required

LIGHTING & ELECTRICAL

Only outdoor fixtures and receptacles are covered

HOT WATER HEATING SYSTEMS

Requirements for low-flow shower heads, heat traps, pipe insulation and pool covers

HOW TO RECEIVE MORE INFORMATION

The Energy Code will be published in late 1996 and will be available from the Canadian Codes Centre. To obtain an order form, please contact

Client Services
Institute for Research in Construction
National Research Council Canada
Building M-20, Montreal Road
Ottawa, ON
K1A 0R6
Fax: (613) 952-7673

Brochures providing more details on the contents of the Energy Code are being updated. To add your name to the mailing list and receive the new versions,* please fax your request to


Energy Code Support Program
Natural Resources Canada
Fax: (613) 943-1590

* Specify if you are interested in the *National Energy Code for Houses*, the *National Energy Code for Buildings* or both.

For more information on energy efficiency, visit our Internet site at: <http://eeb-dee.nrcan.gc.ca>

Aussi disponible en français.

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